

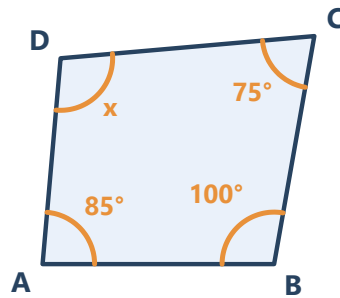
GCSE Maths: Quadrilaterals (Higher): answers

GCSE Maths - Angles, Polygons and Symmetry - Higher - Lesson 17.5

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch17-angles-polygons-symmetry/higher/quadrilaterals/

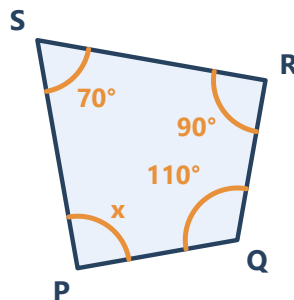
Exercise 17F Quadrilaterals Non-calculator

- 1 The diagram shows a quadrilateral. Work out the size of angle x . Give a reason for your answer.



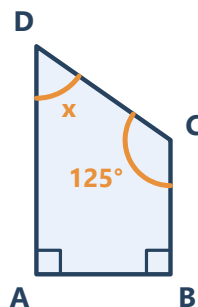
Answer: 100° (angles in a quadrilateral add up to 360°)

- 2 The diagram shows a quadrilateral. Work out the size of angle x . Give a reason for your answer.



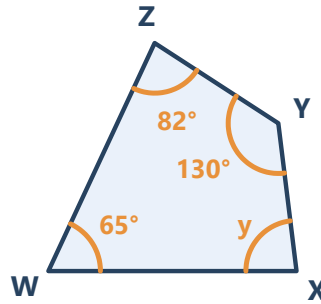
Answer: 90° (angles in a quadrilateral add up to 360°)

- 3 The diagram shows a quadrilateral. Work out the size of angle x . Give a reason for your answer.



Answer: 55° (angles in a quadrilateral add up to 360°)

- 4 The diagram shows a quadrilateral. Work out the size of angle y .



Answer: 83°

- 5 Write the name of the quadrilateral that matches each description. Give the most specific name.

- (a) Four equal sides and four right angles.

Answer: square

- (b) Two pairs of equal sides, and opposite sides parallel, and no right angles.

Answer: parallelogram

- (c) Four equal sides, with no right angles.

Answer: rhombus

- (d) Exactly one pair of parallel sides.

Answer: trapezium

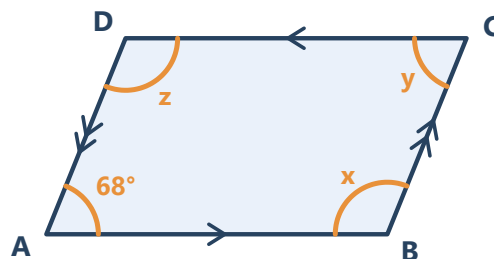
- (e) Two pairs of equal sides next to each other, with one line of symmetry.

Answer: kite

- (f) Four right angles and opposite sides equal, but sides not all equal.

Answer: rectangle

- 6 ABCD is a parallelogram. Angle A = 68° . Work out the size of each angle marked with a letter. Give a reason for each answer.



- (a) Work out angle x (angle B).

Answer: 112° (co-interior angles add up to 180°)

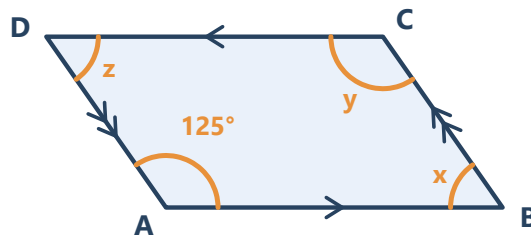
- (b) Work out angle y (angle C).

Answer: 68° (opposite angles of a parallelogram are equal)

- (c) Work out angle z (angle D).

Answer: 112° (opposite angles of a parallelogram are equal)

- 7 ABCD is a parallelogram. Angle A = 125° . Work out the size of each angle marked with a letter. Give a reason for each answer.



- (a) Work out angle x (angle B).

Answer: 55° (co-interior angles add up to 180°)

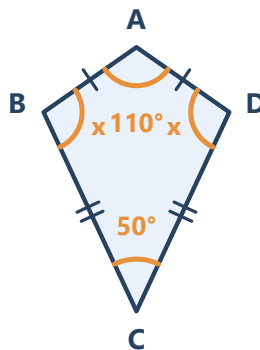
- (b) Work out angle y (angle C).

Answer: 125° (opposite angles of a parallelogram are equal)

- (c) Work out angle z (angle D).

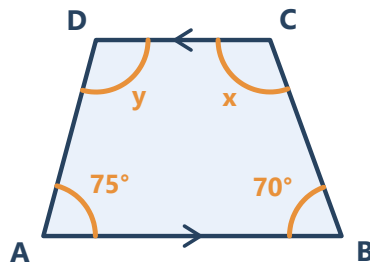
Answer: 55° (opposite angles of a parallelogram are equal)

- 8 ABCD is a kite. Angle BAD = 110° and angle BCD = 50° . Work out angle ABC. Give reasons.



Answer: 100° (a kite has one pair of equal angles; angles in a quadrilateral add up to 360°)

- 9 ABCD is a trapezium with AB parallel to DC. Work out the size of (a) angle x (b) angle y . Give reasons.



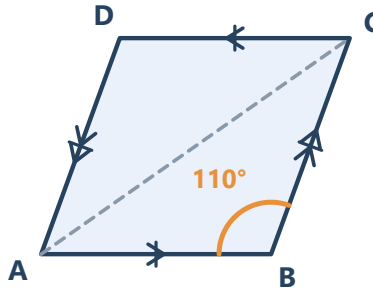
- (a) Angle x (angle BCD)

Answer: 110° (co-interior angles add up to 180°)

- (b) Angle y (angle ADC)

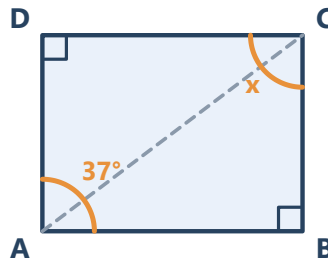
Answer: 105° (co-interior angles add up to 180°)

- 10 ABCD is a rhombus. Angle ABC = 110° . The diagonal AC is drawn. Work out the size of angle BAC. Give reasons.



Answer: 35°

- 11 ABCD is a rectangle and AC is a diagonal. Angle CAB = 37° . Work out the size of angle ACB. Give reasons.



Answer: 53°

- 12 Write down the number of lines of symmetry of each quadrilateral.

- (a) A square: how many lines of symmetry?

Answer: 4

- (b) A rectangle: how many lines of symmetry?

Answer: 2

- (c) A parallelogram: how many lines of symmetry?

Answer: 0

- (d) A rhombus: how many lines of symmetry?

Answer: 2

- (e) A kite: how many lines of symmetry?

Answer: 1

- (f) A isosceles trapezium: how many lines of symmetry?

Answer: 1

13 Write **true** or **false**. Give a reason for each answer.

- (a) Every rectangle is a square.

Answer: False: a rectangle need not have equal sides

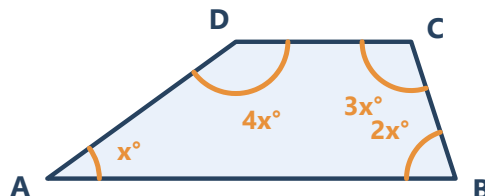
- (b) A rhombus is a parallelogram.

Answer: True: opposite sides are parallel

- (c) A trapezium has two pairs of parallel sides.

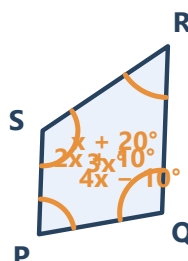
Answer: False: it has exactly one pair

14 The diagram shows a quadrilateral. Work out the value of x .



Answer: $x = 36$

15 The diagram shows a quadrilateral. Work out the size of the angle marked $4x - 10^\circ$.

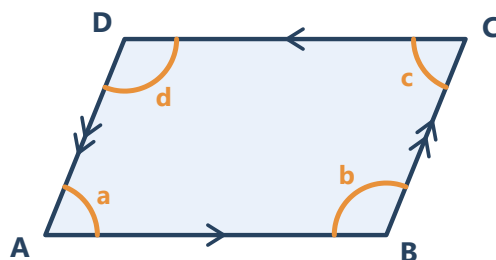


Answer: 126°

- 16** Three angles of a quadrilateral are 90° , 90° and 90° . Write down the fourth angle. What can you say about the quadrilateral? Give a reason.

Answer: 90° ; it is a rectangle (all four angles are right angles)

- 17** Show that the opposite angles of a parallelogram are equal.



Answer: See the solution

- 18** The angles of a quadrilateral are x , $(x + 30)^\circ$, $2x$ and $(3x - 20)^\circ$. Show that the quadrilateral has an angle of 100° .

Answer: $x = 50$; the angles are 50, 80, 100, 130 degrees, so one angle is 100°